

REMARKS

The Office action dated August 18, 2003 and the cited references have been carefully considered.

Status of the Claims

Claims 1-36 are pending. Claims 1-16 and 34-36 are withdrawn pursuant to an election, made on March 25, 2003 by the Applicants' attorney, to prosecute claims 17-33. Therefore, claims 17-33 remain in the current prosecution. The Applicants reserve the right to file one or more divisional patent applications to claim the subject matter of claims 1-16 and 34-36.

Claims 17-23, 29, and 30 are rejected under 35 U.S.C. § 102(b) as being anticipated by Choy et al. (WO 00/06796; hereinafter "Choy"). Claims 24-28 and 31-33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Choy. The Applicants respectfully traverse this rejection for the reasons set forth below.

Objection to the Abstract and Title

The abstract of the disclosure is objected to because it also includes a description of the non-elected invention. The abstract has been amended to include only a description of the apparatus, which is the subject matter of the claims being prosecuted. Therefore, this objection is now overcome.

The title is objected to because it includes a description of the non-elected inventions. The title has been amended to recite only an apparatus. Therefore, this objection is now overcome.

Claim Rejection Under 35 U.S.C. § 102(b)

Claims 17-23, 29, and 30 are rejected under 35 U.S.C. § 102(b) as being anticipated by Choy. The Applicants respectfully traverse this rejection because Choy does not teach each and every element of each of claims 17-23, 29, and 30.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a *single* prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). "The identical invention must be shown in as complete detail as is contained in the . . . claim." *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

Choy discloses a method and an apparatus for inferring only a present physical parameter, such as temperature. For example, Choy discloses:

"Figure 3 is a graph of the emission spectrum for YAG:Tb at different temperatures in response to an excitation wavelength of 266 nm. It will be seen that the spectrum varies in magnitude with temperature." Page 7, lines 20-22 (emphasis added).

"the characteristic time tau varies in dependence on the temperature of the material." Page 8, lines 1-2 (emphasis added).

"the ratio of intensities for two emission wavelengths (493nm and 455nm) in response to excitation at 355nm is plotted against ambient temperature [meaning the temperature of the present surrounding environment] of the coated component in Figure 10." Page 8, lines 22-24 (emphasis added).

Furthermore, Choy discloses:

"[i]n Figure 10, sets of results obtained on different days are shown. These are day 'j9th', the day of fabrication, and the next three days j10th to j12th. The results show a good stability of response with time." Page 8, lines 26-28 (emphasis added).

Thus, it is clear that Choy correlates the spectrum characteristics with only the current or present temperature of the component measured when the spectrum characteristics are measured. Choy discloses neither a characteristic property of the emission spectrum varying in response to a change in an amount of a crystalline, which change has occurred over the past service of the combustion engine component, nor relating that characteristic property of the emission spectrum to past-service conditions or future remaining useful life of the component, as is recited in claims 17-33. Since Choy's "results show a good stability of response with time," (page 8, lines 27-28) Choy could not have disclosed a method or apparatus used to tell the history or the future of the component (requiring a change of the spectrum with respect to time), as is recited in claims 17-33.

In addition, Choy does not disclose relating characteristic property of the emitted radiation to an amount of crystalline phase selected from the group consisting of monoclinic phase, tetragonal phase, and cubic phase, as is recited in claims 17-33. Although Choy mentions phase changes, nowhere does he disclose specifically these crystalline phases. Since there are numerous crystalline phases in alloy materials, a general disclosure of a phase change is not a substitute for a specific disclosure of a monoclinic phase, tetragonal phase, or cubic phase. *In re Petering*, 133 U.S.P.Q. 275 (C.C.P.A. 1962) (a generic disclosure does not anticipate a claim to the specific species); *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984) ("[T]he [Examiner] must identify the elements of the claims, determine their meaning in light of the specification [], and identify corresponding elements disclosed in the allegedly anticipating reference." (emphasis added)).

Since Choy does not disclose each and every element of each of claims 17-23, 29, and 30, Choy does not anticipate these claims.

The Examiner asserted that "[t]he useful time of the coating as well as the condition of the coating is determined by taking the ratio of intensities at two peaks and correlating it to intensities of peak at known temperatures and time to engine failure (see Figs. 4, 7, 8, 10)." The Applicants respectfully traverse this assertion because the Examiner has misinterpreted the data of Figures 4, 7, 8, and 10. The decay time of Figures 4, 7, and 8 is the elapsed time for the intensity of emitted light to decay to 1/e (or 36.8%) of its original intensity immediately after the dopant is excited with a pulse of radiation (page 7, lines 26-28). This decay time is not the useful time of the coating as the Examiner alleged. Furthermore, note that this time is extremely short and is on the order of microseconds to milliseconds. Therefore, it certainly is not the useful time of the coating; otherwise, the coating would be useless because the "useful" time is only on the order of microseconds to milliseconds. Figure 10 shows the ratio of two peaks in the spectrum as a function of the temperature at which the component is currently exposed, and not a historical temperature in the past service of the component.

Claim Rejection Under 35 U.S.C. § 103(a)

Claims 24-28 and 31-33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Choy. The Applicants respectfully traverse this rejection because Choy does not teach or suggest all of the limitations of each of claims 24-28 and 31-33.

"[T]he legal conclusion of obviousness [under 35 U.S.C. § 103(a)] requires that there be some suggestion, motivation, or teaching in the prior art whereby the person of ordinary skill would have selected the components that the inventor selected and used them to make the new device." *C.R. Bard, Inc. v. M3 Systems, Inc.*, 48 U.S.P.Q.2d 1225, 1231 (Fed. Cir. 1998). Thus, in order for the prior art to render the claimed invention obvious, all of the elements thereof must be taught or suggested in the prior art. "What must be found obvious to defeat the patentability of the claimed invention is the claimed combination." *The Gillette Co. v. S.C. Johnson & Son, Inc.*, 16 U.S.P.Q.2d 1923, 1927 (Fed. Cir. 1990).

"To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." "All words in a claim must be considered in judging the patentability of that claim against the prior art." MPEP § 2143.03 (8th ed., rev. 1, Feb. 2003).

As pointed out above, Choy does not teach or suggest either a characteristic property of the emission spectrum varying in response to a change in an amount of a crystalline, which change has occurred over the past service of the combustion engine component, or relating that characteristic property of the emission spectrum to past-service conditions or future remaining useful life of the component, as is recited in claims 17-33. Specific disclosure, teaching, or suggestion is required of a cited reference before it may be used to reject claims under 35 U.S.C. § 103(a). *In re Lee*, 61 U.S.P.Q.2d 1433, 1434 (Fed. Cir. 2002). And none is found in Choy.

Since Choy does not teach or suggest all of the limitations of each of claims 24-28 and 31-33, the claims are patentable under 35 U.S.C § 103(a) over Choy.

In view of the above, it is submitted that the claims are patentable and in condition for allowance. Reconsideration of the rejection is requested. Allowance of claims at an early date is solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Toan P. Vo". The signature is written in a cursive, flowing style.

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